SECTION 19

OIL PIPING AND UNDERGROUND TANK
FOR OIL STORAGE

19-01 SCOPE: The work covered by this section of the specifications consists in furnishing all plant, labor, equipment, appliances and materials not furnished by the government and in performing all operations in connection with the installation of the tank and oil piping for heating system, complete, in strict accordance with this section of the specifications and the applicable drawings, and subject to the terms and conditions of the contract.

19-02 APPLICABLE SPECIFICATIONS: The following Federal Specifications, of the issues listed below but referred to thereafter by basic designation only, form a part of this specification:

WW-T-799a	Tubing, Copper, Seamless (for use with solder joint or flared-tube fittings)
QQ-S-636	Steel; Carbon (Low-Carbon), Sheets & Strips
WW-P-521b	Pipe-Fittings; Malleable Iron, 150 lb.
WW-P-406	Pipe-Steel and Ferrous Alloy
WW-U-531	Unions, Malleable-Iron or Steel, 250 lb.
GGG-P-351a	Pipe-Threads; Taper (American-National)
WW-C-581b	Conduit; Steel, Rigid, Zinc-Coated
HH-C-536	Compound; Plumbing-Fixture-Setting
HH-P-117	Packing; Jute, Twisted
W-F-406	Fittings; Cable & Conduit
FF-H-136	Lead Expansion Sleeves
FF-S-111	Wood Screws

19-03 GENERAL: The contract drawings indicate the extent and general arrangement of the tank and piping system. If any departures from the contract drawings are deemed necessary by the Contractor, details of such departures and the reasons therefore shall be submitted as soon as practical to the Contracting Officer for approval. No such departures shall be made without the prior written approval of the Contracting Officer.

a. Standard Products: The material and equipment to be furnished under this specification shall be the standard product of approved American manufacturer. Where two or more units of the same class of equipment are required, these units shall be products of a single manufacturer, however, component parts of the system need not be the products of the same manufacturer.

b. Materials and Equipment Schedule: Within 45 days after the date of award of contract and before purchase of any materials or equipment, a complete schedule of the Contractor-furnished material proposed for installation shall be submitted for the approval of the Contracting Officer. The schedule shall include catalogues, performance, data, cuts, diagrams, drawings and such other descriptive data as may be required by the Contracting Officer. In the event any items of material contained in the schedule fail to comply with the specification requirements, such items may be rejected.

c. Options of the Government: If the Contractor fails to submit for approval within the specified time or any authorized extension thereof a list of materials in accordance with the preceding paragraph, the Contracting Officer may select a complete line of materials. The selection made by the Contracting Officer shall be final and binding and the items shall be furnished and installed by the Contractor without change in the contract price or time of completion.

19-04 MATERIALS AND EQUIPMENT: The following materials and equipment shall conform to the respective specification and other requirements specified below:

a. Copper Tubing: Federal Specification WW-T-799a, Type K, hard or soft drawn.

b. Steel Sheets: (Uncoated) QQ-S-636 composition, condition and finish best suited for the end use.

c. Pipe Fitting: Federal Specification WW-P-521, class as required to match adjacent piping.

d. Steel Pipe: Federal Specification WW-P-406, Type I, class A, coating as hereinafter specified.

e. Unions: Federal Specification WW-U-531, class as required to match adjacent piping.

f. Plumbing Fixture-Setting Compound: Calking at copper tube-conduit joint and shall conform to the requirements of Federal Specification HH-C-536.

g. Twisted Jute Packing: Twisted jute packing, for calking in copper tube-conduit joint, shall conform to the requirements of Federal Specification HH-P-117, Type II.

h. Lead Expansion Sleeves: Federal Specification FF-H-136, Type 4424, of required sizes.

i. Wood Screws: Federal Specification FF-S-111, round head galvanized or brass, or required size.

19-05 WORKMANSHIP: Equipment shall be installed in accordance with the recommendations of the manufacturer and the best standard practice for this type of work.

19-06 OIL BURNING EQUIPMENT: (TANK & PIPING)

a. Oil Lines: The Contractor shall install complete oil lines from the storage to the furnace unit.

b. Piping: Pipes for oil lines shall be type K soft drawn annealed copper tubing with cast bronze flared joint fittings. Fittings shall be completely fabricated at the factory and shall conform to the requirements of Federal Specification WW-P-460. Copper pipe shall conform to the requirements of Federal Specification WW-P-799. Tubings shall be cut square with mechanical cutters and burrs shall not be permitted. Installation shall be made by competent workman in accordance with the manufacturing recommendations. Mitering of joints for elbows will not be permitted. Vent piping shall be installed as indicated on the drawings with galvanized steel piping and galvanized malleable iron fittings. Pipe supports shall be furnished and set on the structure. Three two-hole galvanized pipe straps shall be provided per each vertical run of vent pipe and securely fastened in place with brass or galvanized, round head, wood screws set in lead expansion shields.

c. Joints: Threaded joints shall have American National taper screw threads conforming to the requirements of Federal Specification GGG-P-31a with graphite and oil compound applied to the male thread.

19-07 EXCAVATING, TRENCHING AND BACKFILLING:

a. Excavating and Trenching: Trenches and pits for all underground pipe lines and tank shall be excavated to the required depths. Rock, where encountered, shall be excavated to a depth of 6 inches below the bottom of pipe. Before pipe is laid the space between bottom of pipe and rock surface shall be filled with gravel, unless otherwise indicated on the drawings. Piping shall have a minimum cover of two feet and trenches shall be only wide enough to allow proper installation of the piping.

b. Backfilling: After pipe lines and tank have been tested, inspected and approved by the Contracting Officer and prior to backfilling, forms and shoring shall be removed and the excavation cleaned of trash and debris. Material for backfilling shall consist of the excavation, or borrow of sand, gravel, or other materils approved by the Contracting Officer, and shall be free of trash, lumber, or other debris. Backfill shall be placed in horizontal

layers not exceeding 9 inches in thickness, and properly moistened to approximate optimum requirements. Each layer shall be compacted by hand or machine tampers or by other suitable equipment to a density that will prevent excessive settlement or shrinkage. Backfill shall be brought to a suitable elevation above grade to provide for anticipated settlement and shrinkage thereof.

19-08 CONCRETE: Concrete shall conform to the requirements specified for class B concrete under section CONCRETE, including the requirements for materials, proportions, mixing, placing, protection, curing and the furnishing of forms.

19-09 TANKS: Except as otherwise indicated on the drawings, or specified herein, each tank shall be constructed and installed in accordance with Pamphlet Nr. 31, of the National Board of Fire Underwriters, and shall be approved and labeled by the Underwriters' Laboratories, Inc. The tanks shall be of the capacity indicated on the drawings or specified and shall be of steel unless otherwise indicated on the drawings. Tanks shall be provided with pipe connections as detailed and specified on the drawings, including fills and vents. An oil-level sounding rod, calibrated in gallons per inch of depth shall be provided for each tank. Unless otherwise indicated on the drawings, foot valves shall be 1/2 inch O.P.W., bronze, single poppet, removable foot valve or approved equal. Concrete anchors shall be provided for any of the tanks, when, due to water table buoyancy as determined in the field, in the opinion of the Contracting Officer, concrete anchors are needed. Three straps, consisting of 3/4 inch steel rods with suitable turnbuckles and anchored to the concrete base, shall be provided for each tank. The rods and turnbuckles shall be wrapped with burlap and painted with asphalt compound. The tanks shall be protected at contact with concrete by means of asphalt impregnated felt not less than 1/2 inch thick.

c. Cleaning & Painting of Underground Tanks: Underground storage tanks, before being placed in the ground, shall be cleaned and painted as follows: The tanks shall be cleaned thoroughly of all loose rust, blisters, loose scale, oil paint of a type different from the field primer, and other substances that would interfere with proper adhesion of the protective coating. Mill scale that cannot be removed by hand wire-brushing need not be removed. Oil and grease shall be removed with mineral spirits or other acceptable solvent having a flush point higher than 80°F. After cleaning, a primer coat shall be applied to the outside of the tank only. The primer shall consist of processed coal-tar pitch and refined coal-tar oils suitably blended to permit application by brush or spray. The primer shall contain no highly volatile solvents or added pigments and shall dry hard within 6 hours. The primer shall not be heated, but the temperature of the metal and the primer temperature at time of application shall be 60° to 80°F.

After the prime coat has become hard to the touch, an enamel coat composed of a specially processed coal-tar pitch combined with an inert mineral filler shall be applied hot, in a layer not less than 1/16 inch thick and in accordance with the manufacturer's recommendations. The enamel shall be free of all asphalt. The use of fluxing oils or thinners to reduce cracking susceptibility in cold weather will not be permitted. Primers and enamels herein mentioned shall not sag or flow from a vertical surface when exposed to an atmospheric test temperature of 160°F., and shall not become a brittle, crack, check or peel when exposed to an atmospheric temperature of minus 20°F. After the enamel is completely applied and cold, all coated surfaces shall be tested with an electric wire-brush holiday detector. The wire brush shall be placed flat in contact with the enamel surfaces and passed over the surface once only at the rate of approximately 35 to 50 feet per minute. Any evidence of missed places will be indicated by an electric spark between the brush and the metal surface. All missed places as indicated shall be marked by chalk or crayon and promptly repaired areas will be required. Primer and enamel shall be suitable products of the Pittsburg Coke and Chemical Company or approved equal.

b. Location of Tanks: The typical locations of the tanks shall be approximately as shown on the drawings. The exact locations shall be as directed by the Contracting Officer.

19-10 PAINTING: All exterior surfaces of piping to be installed underground shall be given one coat of acid resisting paint having a bituminous base. Finish painting of exposed pipe, pipe hangers and all other iron work shall conform to the requirements of the section entitled PAINTING of these specifications.

19-11 CLEANUP: Upon completion of the backfill, all debris and surplus materials resulting from the work shall be removed.